Nevada Division of Environmental Protection
Chemical Accident Prevention Program
Element Audit Checklist

Facility:	**Process(es) Covered:**	**Date:**

II. PROCESS SAFETY INFORMATION (PSI)

A. RECORDS AUDIT/REVIEW

1) EXISTENCE, COMPLETENESS OF PSI

a.	**Compliance of Facility Program with Specific Code Requirements**	**NAC Ref.**	**Resp. Code**
i.	Does the PSI appear to be complete for the covered process and/or subprocess (i.e. the following sections 2 through 6 are satisfied)?	459.95412	
ii.	Is all of the PSI located on site and available to employees (in addition to items 2 through 6, refer to Part B, On-Site Inspection)?	459.95412	

b.	**Potential Enhancements to Facility Program**	**Resp. Code**
i.	Is the PSI organized and readily accessible?	

Notes/Comments Pertaining to Responses to Questions under Issue 1):

2) INFORMATION PERTAINING TO HAZARDS OF SUBSTANCES

a.	**Compliance of Facility Program with Specific Code Requirements**	**NAC Ref.**	**Resp. Code**
i.	Are material safety data sheets (MSDS) or other substance hazard information on site for all Tier A and B substances?	459.95412(2a)	
ii.	Does the substance hazard information include all relevant hazard information (refer to MSDS Summary Form)?	459.95412(2a)	

b.	**Potential Enhancements to Facility Program**	**Resp. Code**
i.	Is the hazardous substance information compiled in an organized fashion, such as in an indexed notebook?	
ii.	Is the hazardous substance information available in a location or several locations to provide easy access to all employees that may require such information?	

Notes/Comments Pertaining to Responses to Questions under Issue 2):

3) INFORMATION PERTAINING TO THE TECHNOLOGY OF THE PROCESS			
a.	**Compliance of Facility Program with Specific Code Requirements**	**NAC Ref.**	**Resp. Code**
i.	Has a block flow or simplified Process Flow Diagram been developed?	459.95412(2b1)	
ii.	Does Flow Diagram accurately cover the extent of regulated process ?	459.95412(2b1)	
iii.	Does a Process Chemistry description exist for current process?	459.95412(2b2)	
iv.	Does Process Chemistry describe chemical reactions for primary & secondary reactions?	459.95412(2b2)	
v.	Does Process Chemistry describe the type and nature of catalysts used?	459.95412(2b2)	
vi.	Does Process Chemistry describe competing side reactions?	459.95412(2b2)	
vii.	Does Process Chemistry describe undesirable chemical reactions such as decompositions and autopolimerizations?	459.95412(2b2)	
viii.	Is the maximum intended onsite inventory defined?	459.95412(2b3)	
ix.	Is a Safe Upper Limit for process Pressure(s), along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
x.	Is a Safe Lower Limit for process Pressure(s), along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xi.	Have the Consequences of Deviating outside the Pressure limits been evaluated?	459.95412(2b5)	
xii.	Is a Safe Upper Limit for process Temperature(s), along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xiii.	Is a Safe Lower Limit for process Temperature(s), along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xiv.	Have the Consequences of Deviating outside the Temperature limits been evaluated?	459.95412(2b5)	
xv.	Is a Safe Upper Limit for process Flow(s), along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xvi.	Is a Safe Lower Limit for process Flow(s), along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xvii.	Have the Consequences of Deviating outside the Flow limits been evaluated?	459.95412(2b5)	
xviii.	Are Stream Composition Limits, along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xix.	Have the Consequences of Deviating outside the Composition Limits been evaluated?	459.95412(2b5)	
xx.	Are minimum pipe and vessel wall thickness, along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xxi.	Are instrument calibration tolerances defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xxii.	Are rotating equipment tolerances, such as vibration limits, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	

xxiii.	Are other process or mechanical limits defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xxiv.	Have the Consequences of Deviating outside the limits established under xx through xxiii been evaluated?	459.95412(2b5)	

b.	**Potential Enhancements to Facility Program**	**Resp. Code**
i.	Is Process Chemistry written to be understandable to operations personnel or others that may need this information?	
ii.	Is a minimum required on-site inventory defined?	

Notes/Comments Pertaining to Responses to Questions under Issue 3):

4) INFORMATION RELATED TO THE EQUIPMENT OF THE PROCESS

a.	**Compliance of Facility Program with Specific Code Requirements**	**NAC Ref.**	**Resp. Code**
i.	Have comprehensive equipment and piping lists been developed, or if a piping list has not been developed, is the piping specification clearly noted for each line on the P&ID?	459.95412(2c1)	
ii.	Have equipment & piping materials been evaluated for compatibility with process fluids?	459.95412(2c1)	
iii.	Have design parameters (i.e. temperature, pressure, etc) been determined for equipment and piping; and is the equipment and piping capable of handling the maximum and minimum process conditions?	459.95412(2c1)	
iv.	Have comprehensive instrument lists been developed?	459.95412(2c1)	
v.	Have instruments been evaluated for compatibility with process fluids?	459.95412(2c1)	
vi.	Have design parameters (i.e. temperature, pressure, etc) been determined for instruments; and are instruments capable of handling the maximum and minimum process conditions?	459.95412(2c1)	
vii.	Do Piping & Instrument Diagrams (P&IDs) cover the entire regulated process, including process auxiliary systems and utilities?	459.95412(2c2)	
viii.	Do P&IDs contain all process equipment and piping?	459.95412(2c2)	
ix.	Do P&IDs contain all instrumentation?	459.95412(2c2)	
x.	Is control logic readily evident from the P&ID, or if not, is control logic documented in a separate format such as ladder logic diagrams, wiring schematics, SAFE charts?	459.95412(2c2)	
xi.	Has P&ID and control logic accuracy been confirmed by the facility?	459.95412(2c2)	
xii.	Have Electrically Hazardous Areas, defined pursuant to Article 500 of the National Electric Code, been defined?	459.95412(2c3)	

xiii.	Have all electrical components & equipment within defined Electrically Hazardous Areas been evaluated for compatibility with the electrical classification, and found to be compatible?	459.95412(2c3)	
xiv.	Have control rooms and other buildings within Electrically Hazardous Areas been evaluated for compatibility with the electrical classification and found to be compatible?	459.95412(2c3)	
xv.	Have all Pressure Relief Devices been listed with the following information from the actual valve: set pressure and capacity @ defined overpressure (taken from valve nameplate or from vendor data traceable to the valve)?	459.95412(2c4)	
xvi.	Have required relief pressures, rates and sizing basis (i.e. process upset, fire or thermal relief) been determined for each corresponding Pressure Relief Device listed in xv above?	459.95412(2c4)	
xvii.	Have actual Pressure Relief Device pressure settings and capacities been determined to be adequate?	459.95412(2c4)	
xviii.	Has process been evaluated to determine if additional Pressure Relief Devices are required?	459.95412(2c4)	
xix.	Have pressure relief headers and associated flares or scrubbers been evaluated for adequate capacity, and has the capacity been determined to be adequate?	459.95412(2c4)	
xx.	For regulated processes enclosed by a building, has the capacity of the mechanical Ventilation Systems been determined?	459.95412(2c5)	
xxi.	Has the required capacity of the building Ventilation System, as required by the Uniform Fire Code, been evaluated?	459.95412(2c5)	
xxii.	Is there documentation verifying that the building Ventilation System configuration and capacity are adequate?	459.95412(2c5)	
xxiii.	If building Ventilation System includes a scrubber for toxic or highly toxic compressed gases, does it meet rqmts of Uniform Fire Code, Article 80 (section 8003.3.1.3.5)?	459.95412(2c5)	
xxiv.	Does the building Ventilation System meet Uniform Fire Code requirements?	459.95412(2c5)	
xxv.	Do Heat & Material Balances exist for the regulated process (not mandatory if the process was built before May 26, 1992)?	459.95412(2c7)	
xxvi.	Do Heat & Material Balances show, at a minimum: stream pressure, temperature, composition (incl. minor concentrations of toxics and corrosives), state and physical properties (such as molecular wt., density, viscosity)?	459.95412(2c7)	

b.	**Potential Enhancements to Facility Program**	**Resp. Code**
i.	Do P&IDs show equipment names and informational summary along top or bottom borders (i.e. Pressure Vessel Name, MAWP @ Temp, Vessel Dimensions; Pump Name, Capacity, Differential Head; etc.)?	
ii.	Is original installation date and purchase orders available for all piping, equipment and instruments?	
iii.	Are Electrically Hazardous Areas identified on a plot plan and in elevation or detail views as necessary?	

Notes/Comments Pertaining to Responses to Questions under Issue 4):

5) DESCRIPTION OF SAFETY SYSTEMS AND THEIR FUNCTIONS

a.	**Compliance of Facility Program with Specific Code Requirements**	**NAC Ref.**	**Resp. Code**
i.	Has a Safety System Description, SSD, been developed and does it include the applicable portions of sections iii through xiii below?	459.95412(2c8)	
ii.	Does SSD appear to be complete based on review of Process or Block Flow Diagram, P&ID and/or on-site inspection?	459.95412(2c8)	
iii.	If process is covered by an Emergency Shut-Down System, is it discussed in the SSD?	459.95412(2c8)	
iv.	If the process area has Toxic Gas Sensors, are they discussed in the SSD?	459.95412(2c8)	
v.	If the process area has Combustible Gas Sensors, are they discussed in the SSD?	459.95412(2c8)	
vi.	If the process area has Flame Detectors, are they discussed in the SSD?	459.95412(2c8)	
vii.	If the process has a Firewater System, is it discussed in the SSD?	459.95412(2c8)	
viii.	If the process has an Emergency Generator, is it discussed in the SSD?	459.95412(2c8)	
ix.	If the process has an Uninterruptible Power Supply, UPS, is it discussed in the SSD?	459.95412(2c8)	
x.	If the process has a Flare System, Incinerator or Vent Scrubber, is it discussed in the SSD?	459.95412(2c8)	
xi.	If there are audible or visual Alarms, are they discussed in the SSD?	459.95412(2c8)	
xii.	If the process has an associated building Ventilation System, is it discussed in the SSD?	459.95412(2c8)	
xiii.	Are there other safety systems (list below)? If so, are they discussed in the SSD?	459.95412(2c8)	

b.	**Potential Enhancements to Facility Program**	**Resp. Code**
i.	Has a plot plan been developed that illustrates the location of the various sensors, detectors and safety equipment as identified in the SSD?	
ii.	Has a plot plan been developed that illustrates the fire water system layout, including header layout and pump, tank, hydrant and monitor location as identified in the SSD?	
iii.	Has a single line electrical diagram been incorporated into the SSD that delineates what sources are supplied by emergency power generation?	
iv.	Has a diagram or list of sources powered by the UPS system been provided, with an estimate of battery life?	
v.	Has a chart been developed that describes what initiates an Emergency Shutdown and describes the subsequent actions?	

Notes/Comments Pertaining to Responses to Questions under Issue 5):

6) EVALUATION OF CODE APPLICABILITY AND COMPLIANCE

a.	**Compliance of Facility Program with Specific Code Requirements**	**NAC Ref.**	**Resp. Code**
i.	Have all applicable codes and specifications been defined by the facility (refer to PSI data forms)?	459.95412(2c6)	
ii.	Has code compliance been evaluated by the facility (refer to PSI data forms)?	459.95412(3&4)	
iii.	Have code deficiencies been corrected?	459.95412(3&4)	

b.	**Potential Enhancements to Facility Program**	**Resp. Code**
i.	For facilities 'grand fathered' into earlier versions of codes, has an evaluation of compliance with the current version of the codes been conducted?	
ii.	For facilities 'grand fathered' into earlier versions of codes, if deficiencies with respect to current codes were identified, were the deficiencies corrected?	

Notes/Comments Pertaining to Responses to Questions under Issue 6):

General Records Audit/Review Notes/Comments:

B. ON-SITE INSPECTION

1)	VERIFY THAT PSI IS ONSITE, ACCESSIBLE AND CURRENT	Resp. Code
a.	Are MSDS sheets or hazardous substance information on site and available to employees?	
b.	Are block flow or process flow diagrams, and process chemistry available to employees?	
c.	Are P&IDs available to employees?	
d.	Are piping, equipment and instrument specifications available to employees that must use them?	
e.	Is electrical hazardous area classification information available to employees that must use the information?	

Notes/Comments Pertaining to Responses to Questions under Issue 1):

2) SELECT AT LEAST ONE P&ID FOR FIELD VERIFICATION
LIST SELECTED P&ID(s) ON THE FOLLOWING TABLE:

#	P&ID NUMBER	DRAWING TITLE	Revision	Revision Date
i				
ii				
iii				
iv				

	Inquiry/Observation (Highlight items on P&ID as they are verified in field)	Resp. Code : i	ii	iii	iv
a.	Do the piping and piping components match the drawing?				
b.	Does a spot check of flanges, fittings and valves indicate conformance to piping specifications?				
c.	Do the pressure vessels, pumps, compressors, heat exchangers and other equipment match the drawing?				
d.	Does spot check of pressure vessels, pumps, compressors, heat exchangers and other equipment indicate conformance to equipment specifications?				
e.	Do instruments match the drawing?				
f.	Does spot check of instruments indicate conformance to instrument specifications?				

g.	Does control logic documentation exist where needed to verify logic shown on the drawing?				
h.	Does labeling on process pipe, equipment and instruments appear adequate?				

Notes/Comments Pertaining to Responses to Questions under Issue 2):

3)	**VERIFY OTHER PSI INFORMATION**	**Resp. Code**
a.	From a spot check of electrical components (such as motors, enclosures and instruments) in electrically hazardous locations, does it appear that the components comply with the location?	
b.	From a field review of the systems in the Safety System Description, does the description appear accurate and complete?	

Notes/Comments Pertaining to Responses to Questions under Issue 3):

General On-Site Inspection Notes/Comments:

C. INTERVIEWS

1) **SELECT AT LEAST ONE OPERATING AND ONE MAINTENANCE PERSON TO INTERVIEW REGARDING THE EFFECTIVENESS OF PSI USING THE FOLLOWING QUESTION SETS.**
(RESPONSES ARE TO BE LOGGED ON FOLLOWING PAGES.)

Question Set	Question Options/Phrasing
a	What is your responsibility?
b	Do you use process flow diagrams or piping & instrument diagrams on your job? If so, how do you use them?
c	Do you use piping, equipment, instrument or electrical specifications on your job? If so, how do you use them?
d	Do you refer to the safety system description on your job? If so, how do you use it?

C. INTERVIEWS

2) RECORD RESPONSES OF SELECTED OPERATING OR MAINTENANCE PERSONNEL TO QUESTIONS FROM THE QUESTION SETS

Employee Profile

Job Title/Position	Department/Unit/Group	Yrs in Job	Yrs w/Co.

Response to Question Set _:

Response to Question Set _:
Response to Question Set _:

Response to Question Set _: